General SAM Hints and Tips

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Removing Special Runs
Cutting on Detector Quality
DB Query Tips
UDP problem
What to do if slow response

Checking Sam's Health
SamRoot
Future tools

Sam on clued0

Notes

◆ I'm not a super-SAM expert

◆ Have little experience with CAB
(see Heidi's talk)

◆ But, I'm involved in tools development with SAM (so I go to the SAM meetings)

◆ I know what the SAM team is worried about

◆ Heidi will give some tips too (Parallel jobs, Resubmission)

Removing special runs from dataset

◆ Problem: You want to make a dataset definition but exclude special runs

◆ Solution:
Use `onl_run_type` dimension.

```
--dim='run_number 166780-166789 and
       data_tier raw and onl_run_type Physics'
```

Valid values are `Calibration`, `Cosmics`, `Physics`, `Special`, `Test`.
Note dimension queries are *case-sensitive* (use the capitalization above)

◆ Confusion: There is also a `run_type` dimension.
Valid values are: (`calibration`, `detector`, `detector data`, `monte carlo`, `online archive`, `other`, `physics data taking`, `run1`, `vlpc characterization`).
Use to separate collider data from MC. Note all lowercase.

A. Lyon (FNAL/D0) – 2002

Cutting on detector quality

◆ Problem: You want runs where the muon system had good quality

◆ Solution: Use `run_qual_group` and `run_quality` dimensions together.

```
--dim=' run_number 166780-166789 and data_tier raw and
(run_qual_group MUO and run_quality REASONABLE)'
```

◆ Unfortunately, you can't do multiple groups (yet).

DB query tips

◆ Avoid querying on the file name when you can use meta-data (use `data_tier, physical_datastream_name, appl_name, run_number, …`)

◆ If you must query on the file name, **never** put % first (e.g. %168573%)

   ❖ You lose all indexing – DB will have to scan EVERY entry (millions).
   ❖ Will be horribly slow and you will bog down DB server
   ❖ If you find you can't avoid this usage, send mail to sam-admin so experts can come up with changes to the meta-data.

UDP problem (CAB/CLUED0)

◆ Jobs crash on CAB – a file already consumed appears to be delivered again

◆ Some SAM communication is done with UDP packets.

  ❖ When a file is delivered, your project sends a UDP acknowledge packet to the station to say it got the file.

  ❖ For some reason, station never receives packet.

  ❖ Station assumes file wasn't delivered and it tries to deliver again.

  ❖ But your job in fact consumed the file. When it is delivered again, your job throws an exception which is not caught by the framework.
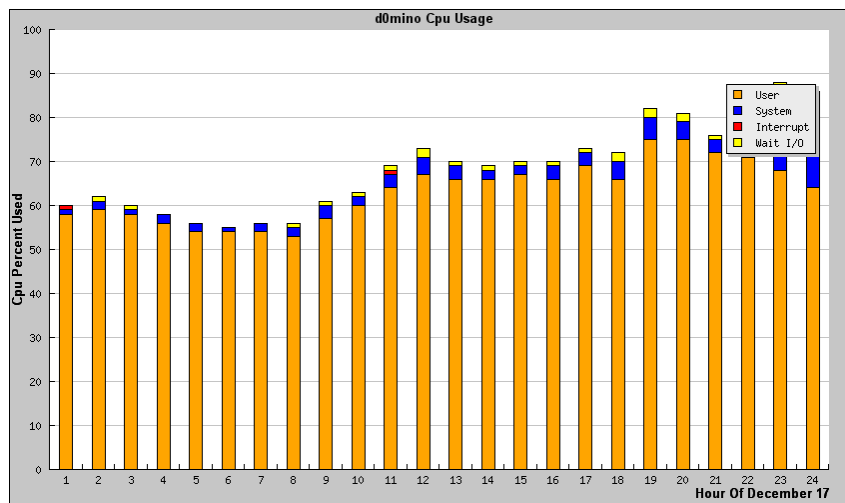
UDP problem

◆ **Seen mostly on CAB**

  ❖ Seems to be correlated with CPU load
  ❖ Increased timeout on station (d0mino station already upgraded). Stopped crashes.

◆ **Seen rarely on CLUED0**

  ❖ Load is much lighter

◆ **Long term solution is to move to CORBA for SAM communications**

◆ **Not seen on d0mino: all communication is internal**

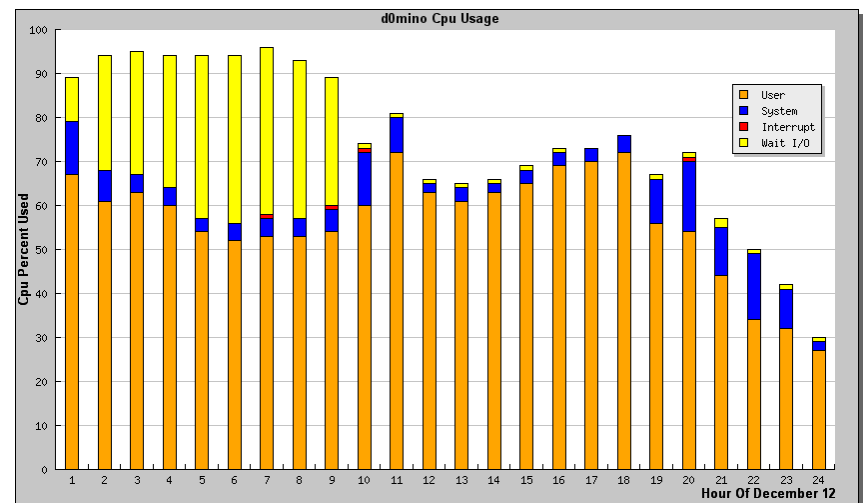# What to do when response is slow

◆ Problem: sam commands take a long time to respond

◆ This may be a d0mino system problem. Check the d0mino performance metrics.

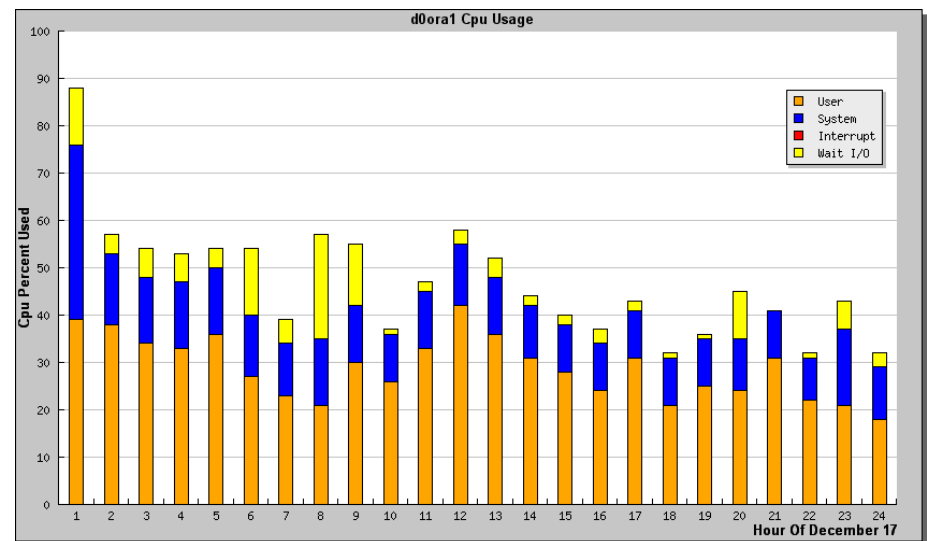`http://d0om.fnal.gov/d0admin/sysperf/`

A good day (12/17)

A very bad day (12/12)

A root job was writing to a full disk. Irix got confused and d0mino became bogged down. (Root/Irix problem)

Slow response continued

◆ Problem: Misweb/DDE web sites are slow

◆ Usually caused by usage of d0ora1 (production oracle DB server). **Everybody** talks to d0ora1.

◆ Note that response will be slow early morning (FNAL time) due to backups and other jobs.

◆ If CPU is maxed then DB response will certainly be slow. But DB can be slow for other reasons too.

Is SAM healthy?

◆ A quick check is:

```
> setup sam
> time sam locate foo
No such file: foo
1
```

◆ Timing on
clued0 should be around 2.5s user, 0.05s system
d0mino is longer (8s user, 5s system)
If the system time >> user time, something could be
wrong with the system

SamRoot

◆ Instead of copying root files to your area with SAM, run SAM within root (Sam-Root Serial Interface)

◆ See `http://d0db.fnal.gov/sam/doc/userdocs/SamRoot.html`

◆ Use *sam_client_api* A user interface to SAM from C++/root

◆ Caveats:
 ❖ Only D0mino
 ❖ Can only read files, not store
 ❖ It's version may be (slightly) different than D0RunII

◆ Like runProject.py, but it runs within root!

◆ Are people using this interface (Sam-team has gotten little feedback)? Please give it a try. Send experiences (good & bad) to sam-admin.

Sam response to problems

◆ In the past, response by SAM shifters to problems (e-mail to sam-admin) has been less than stellar – SAM team is trying to improve situation

◆ Kin Yip is now SAM shift coordinator

◆ Kin and Wyatt track mail to sam-admin and responses

◆ Shifter training improving

Future user features

◆ Working on tools for SAM project archeology

◆ Error handling for `runProject.py`

 ❖ Your job copies files and your disk fills up: SAM thinks you got all requested files

 ❖ For now, you should be keeping track of copy or other system command errors

Sam on Clued0

◆ Installing/Configuring/Testing SAM on clued0 has been a long process. Thanks to Sinisa, Lukas, Dugan, …

◆ Clued0 officially opened for SAM business on December 6, 2002

❖ 20 stager nodes (so max 20 SAM jobs)

❖ SAM only available through batch system

❖ Limited to 6 simultaneous downloads from enstore/d0mino (< 1TB/day)

❖ No stagers in DAB due to network hubs

❖ Clued0 SAM-admins are Adam Lyon & Jon Hays

❖ If problems, send mail to sam-clued0@fnal.gov. We triage and will forward to sam-admin if we're stumped.

Sam on Clued0

◆ Turn on has been fairly smooth:

- ❖ Stagers now automatically start when node reboots
- ❖ Fcp daemon death halted deliveries on 12/12 – restarted and all was well
- ❖ Usual batch system "features"
- ❖ Make sure you change 'central-analysis' to 'clued0' for station name
- ❖ Make sure you submit your job from a NFS mountable directory
- ❖ Don't specify a destination machine – the batch system will land your job on a SAM stager node
- ❖ If you kill your batch job, please also
  `sam stop project --project=yourName_12345`

Sam on Clued0 Stats

◆ From 12/6 – 12/18, 0.158TB (502 files) have been transferred to clued0 station

◆ No one has tried storing files

◆ We're still small potatoes

clued0
Incoming(+) / Outgoing(-)
File Transfers Completed Per Day

Stations:
central-analysis
enstore